

REMARKS/ARGUMENTS

Applicant acknowledges receipt of the Final Office Action dated December 28, 2009 in which the Office Action: rejected claims 1-4, 10-16, 18-20, 23-30, 32-33, 35, 51-57, 61-69 and 72-77 under 35 U.S.C. §102 (b) as allegedly being anticipated by *Sarrazin* (U.S. Patent No. 5,356,851); rejected claims 1-4, 6, 12-13, 14-16, 18-20, 22-30, 32-33, 36, 37, 51-57, and 61-70 under 35 U.S.C. §102 (b) as allegedly being anticipated by *Thomson* (U.S. Patent No. 5,817,896); rejected claims 58-60, 112-115, and 117-119 under 35 U.S.C. §102 (b)/ 35 U.S.C. §103(a) as being anticipated/obvious by *Sarrazin* (U.S. Patent No. 5,356,851); rejected claims 112-119 under 35 U.S.C. §102 (b)/ 35 U.S.C. §103(a) as being anticipated/obvious by *Thomson* (U.S. Patent No. 5,817,896); and rejected claims 37-39, 41-44, 46-47, 48 & 49-50, under 35 U.S.C. §103(a) as being obvious by *Sarrazin* and *Thomson*, further in view of *Dai* (U.S. Patent No. 6,822,127).

Status of the Claims

Claims 1, 11, 12, 14, 51, 66-68, 112, 114, and 115 are amended.

Claims 8-9, 21-22, 31, 34, 40, 45, and 48 are canceled

Claims 1-4, 6, 10-16, 18- 20, 23-30, 32-33, 35-39, 41-44, 45-44, 49-77, and 112-119 are currently pending. Claims 1, 14, 37, 51, 66, and 112 are independent claims from all other pending claims depend directly or indirectly.

I. Claims Rejections – 35 U.S.C. § 102(b)

A. Claims 1-4, 10-16, 18-20, 23-30, 32-33, 35, 51-57, 61-69 and 72-77

The Examiner rejects claims 1-4, 10-16, 18-20, 23-30, 32-33, 35, 51-57, 61-69 and 72-77 under 35 U.S.C. 102(b) as being anticipated by *Sarrazin et al.*, U.S. Patent No. 5,356,851, hereinafter *Sarrazin*. Applicants traverse this rejection.

The Examiner improperly asserts that *Sarrazin* discloses every element and therefore anticipates the instant claims. To anticipate a claim, a reference must *disclose every element* of the challenged claim and enable one skilled in the art to make the anticipating subject matter. *PPG Industries, Inc. v. Guardian Industries Corp.*, 75 F.3d 1558, 1566 (Fed. Cir.1996)

(emphasis added). Specifically, *Sarrazin* fails to disclose Group VIIB metals or specifically, manganese. As such *Sarrazin* fails to anticipate the instant claims.

Further, the Examiner fails to recognize the differences in the catalyst composition and structure in the disclosure of *Sarrazin* and the instant claims. As such, the Examiner improperly rejects the claims under the §102 and misstates the inherent properties of the reference catalyst. MPEP 2113 states that the product-by-process claims are not limited to the manipulations of the recited steps, *only the structure implied by the steps, especially where the product can only be defined by the process steps by which the product is made* (*In re Garnero*, 412 F.2d 276, 279, 162 USPQ 221, 223 (CCPA 1979), emphasis added). The Examiner asserts “the catalyst disclosed by *Sarrazin* would inherently be capable of performing the same because both the disclosed catalyst and the claimed catalyst contain the same metal components, same metal concentrations, and having the same composition.” As articulated above, *Sarrazin* fails to disclose a catalyst with Mn. Additionally, *Sarrazin* discloses a product by process:

“A catalyst containing at least one group VIII metal and at least one group IIIA metal selected from the process consisting of gallium and indium, said metals deposited on a catalyst support being produced by a process comprising:

*a) impregnating support with a solution of a **Group IIIA** compound precursor of said IIIA metal ...fixed on the support,* (emphasis added)”

as in claim 1 cited by the Examiner. Compared with the catalyst found, for example, in instant Claim1, having:

*“a precursor comprising at least one **Group VIII** metal disposed on an inorganic support.”*

The catalyst structure of *Sarrazin*, having a **Group IIIA** metal coated support, is not analogous to a **Group VIII** metal coated support as in the instant claims. Applicants submit that this difference alone fails to meet the “every element” and “implied structure” thresholds to establish a valid anticipation rejection under 35 U.S.C. 102(b).

Sarrazin's claim 1 continues:

“(b) impregnating the product of (a) obtained with a solution of group VII compound precursor of said group VIII metal...fixed on the support,”

as cited by the Examiner. Compared with the catalyst found, for example, in instant Claim1, having:

“a second metal selected from the group consisting of zinc, Group IIIA metals, Mn, and combinations thereof, disposed on the precursor.” (emphasis added)”

The catalyst structure of *Sarrazin* having a support coated in a **Group IIIA**, and coated with a group VIII metal, is not analogous to the instant claim 1. As such the composition of *Sarrazin*'s catalyst and the structure fail to anticipate the instant claimed catalyst.

Further, the Examiner improperly asserts that the claimed limitation, for example from Claim 1:

“wherein the catalyst is capable of selectively hydrogenating acetylene with a conversion Sc of at least about 95% and a selectivity to ethylene relative to ethane Ss of at least about 25 when the catalyst is employed in a steady-state liquid phase hydrogenation process”

is inherent in *Sarrazin*. The Examiner fails to provide rationale or evidence tending to show inherency in light of the structural and compositional differences. MPEP 2112 states that inherency may not be established by probabilities, possibilities or the mere fact that a certain thing may result from a given set of circumstances (*In re Robertson*, 169 F.3d 743, 745, 49 USPQ2d 1949, 1950-51 (Fed. Cir. 1999)). With regards to the catalyst structure of *Sarrazin*, a support coated in a **Group IIIA**, and coated with a group VIII metal, is not structurally analogous to the instant claim 1. As, it is well known and commonly acknowledged by those skilled in the art that the *catalytic arts are inherently unpredictable*, the compositional differences and the structural differences, determined by the sequence of deposition, between *Sarrazin* and the instant claims remove anticipation or inherency. For this reason, Applicants submit that claims 1-4, 10-16, 18-20, 23-30, 32-33, 35, 51-57, 61-69 and 72-77 are patentable over *Sarrazin*.

B. Claims 1-4, 6, 12-13, 14-16, 18-20, 22-30, 32-33, 36, 37, 51-57, and 61-70

The Examiner rejects claims 1-4, 6, 12-13, 14-16, 18-20, 22-30, 32-33, 36, 37, 51-57, and 61-70 under 35 U.S.C. 102(b) as being anticipated by *Thomson*, U.S. Patent No. 5,817,896, hereinafter *Thomson*. Applicants traverse this rejection.

The Examiner fails to recognize the chemical and structural differences between *Thomson's* catalyst and the instant catalyst. To anticipate a claim, a reference must *disclose every element* of the challenged claim and *enable* one skilled in the art to make the anticipating subject matter. *PPG Industries, Inc. v. Guardian Industries Corp.*, 75 F.3d 1558, 1566 (Fed. Cir.1996) (emphasis added). *Thomson* does not claim or disclose the limitation “Mn.” *Thomson* fails to disclose a catalyst with components “selected from the group consisting of Group IIIA metals, zinc, Mn, and combinations thereof.” As such, *Thomson* cannot anticipate the instant claims because it does not disclose each and every element, inherently or expressly. *Thomason* does not enable one skilled in the art to make the invention without undue experimentation as the disclosure is drawn to a halogen replacement catalyst.

Further, the Examiner improperly asserts that the claimed limitations, for example from Claim 1:

“wherein the catalyst is capable of selectively hydrogenating acetylene with a conversion Sc of at least about 95% and a selectivity to ethylene relative to ethane Ss of at least about 25 when the catalyst is employed in a steady-state liquid phase hydrogenation process”

are inherent in *Thomason*. MPEP 2112 states that inherency may not be established by probabilities, possibilities or the mere fact that a certain thing may result from a given set of circumstances (*In re Robertson*, 169 F.3d 743, 745, 49 USPQ2d 1949, 1950-51 (Fed. Cir. 1999). The catalyst and disclosure of *Thomason* fails to provide “at least one Group VIIB metal.” As it is well known and commonly acknowledged by those skilled in the art that the *catalytic arts are inherently unpredictable*, and the structural differences, determined by the different metals, between *Thomason* and the instant claims remove anticipation or inherency. For this reason, Applicants submit that claims 1-4, 6, 12-13, 14-16, 18-20, 22-30, 32-33, 36, 37, 51-57, and 61-70 are patentable over *Thomason*.

II. Rejection of Claims – 35 U.S.C. § 102(b)/103(a)

A. Claims 58-60, 112-115, & 117-119

The Examiner rejects claims 58-60, 112-115, & 117-119 under 35 U.S.C. 102(b)/103(b) as being anticipated and/or obvious under *Sarrazin et al.* (U.S. Patent No. 5,356,851), hereinafter *Sarrazin*. Applicants reiterate the arguments above and traverse this rejection.

Specifically, the Examiner improperly disregards the structure implied by product-by-process limitations of the prior art and the instant claims. MPEP 2113 states that the product-by-process claims are not limited to the manipulations of the recited steps, *only the structure implied by the steps*, especially where the product can only be defined by the process steps by which the product is made (*In re Garnero*, 412 F.2d 276, 279, 162 USPQ 221, 223 (CCPA 1979), emphasis added). As *Sarrazin* discloses a catalyst formed by sequential steps of metallic deposition, the process defines the catalyst structure. *Sarrazin* discloses a catalyst with the structure, from inner to outer layer, as: support, Group IIIA metals, and Group VIII metals, as the outer layer. As such, *Sarrazin* fails to disclose any alternative product-by-process that would form a different catalyst structure. Further, *Sarrazin* fails to disclose Group VIIB metals and specifically Mn. As the catalytic arts are acknowledged to be inherently unpredictable, the product-by-process of *Sarrazin* can not anticipate or render the instant claims *prima facie obvious*. As such claims 58-60, 112-115, and 117-119 are submitted to be patentable over *Sarrazin*.

B. Claims, 112-119

The Examiner rejects claims 112-119 under 35 U.S.C. 102(b)/103(b) as being anticipated and/or obvious under *Thomson*. (U.S. Patent No. 5,817,896), hereinafter *Thomson*. Applicants reiterate the arguments above and traverse this rejection.

To anticipate a claim, a reference must *disclose every element* of the challenged claim and *enable* one skilled in the art to make the anticipating subject matter. *PPG Industries, Inc. v. Guardian Industries Corp.*, 75 F.3d 1558, 1566 (Fed. Cir.1996) (emphasis added). *Thomson* does not claim or disclose the limitation “selected from the group consisting of Group IIIA metals, zinc, Mn, and combinations thereof” as in amended independent claim 112. In fact *Thomason* fails to disclose any Group VIIB metals. As the catalytic arts are acknowledged to be inherently unpredictable, *Thomason* cannot anticipate or render the instant claims *prima facie obvious*. As such, claim 112-119 are submitted to be patentable over *Thomason*.

III. Rejection of Claims – 35 U.S.C. § 103(a)

Claims 37-39, 41-44, 46-47, 48 & 49-50

The Examiner rejects claims 37-39, 41-44, 46-47, 48, and 49-50 under 35 U.S.C. 103(a) as being obvious under the combination of *Sarrazin* and/or *Thomson* further in view of *Dai*, U.S. Patent No. 5,817,896, hereinafter *Dai*. Applicants reiterate the arguments above in regards to *Sarrazin* and *Thomason*, and traverse this rejection.

The Examiner improperly alleges it would have been *prima facie obvious* on the reading of *Dai* to incorporate manganese (Mn) into the catalyst of the *Sarrazin* and/or *Thomason* references. The Examiner fails to take the disclosures of *Sarrazin* and/or *Thomason* and *Dai* into account in making the rejection. The MPEP §2141 states "in determining the differences between the prior art and the claims, the question under 35 U.S.C. §103 is not whether the differences themselves would have been obvious, but whether the claimed invention as a whole would have been obvious" (*Stratoflex, Inc. v. Aeroquip Corp.*, 713 F.2d 1530, 218 USPQ 871 (Fed. Cir. 1983) emphasis added). Specifically, *Sarrazin* discloses a liquid phase, bi-layered, diolefin/acetylene hydrogenation catalyst (Example 4-5; Col 7, claim 1; Col 2, lines 5-7). *Thomason* discloses a gas phase, three component, halogen-replacement catalyst (Col 1, lines 55-65). *Dai* discloses a gas phase, four component catalyst including only Pd as the only Group VIII metal and main active component, a rare earth metal, a co-catalyst and at least one or more of ten other metals (Col 3, lines 1-6). The Examiner fails to consider the combination of references *Sarrazin* and *Dai* as a whole, because the references are drawn to catalysts designed to function in different phase reactions. The Examiner fails to consider the combination of the references *Thomason* and *Dai* as whole, because *Dai* fails to disclose a catalyst composition excluding a rare earth metal and/or bismuth. Further, Applicants note that the catalyst of *Dai* includes nine potential catalyst metals, seven potential co-catalyst metals, four potential combined oxygen sources, rare earth metals and bismuth (Col 1, lines 55-65). Applicants submit this fact, the differences between *Sarrazin* and *Dai*, the differences between *Thomason* and *Dai*, and the acknowledged inherent unpredictability in the catalytic arts remove all reasonable expectation of success in forming the instant catalyst. Applicants submit claims 37-39, 41-44, 46-47, 48, and 49-50 are patentable over the combinations of *Sarrazin* and/or *Thomason* and *Dai*.

As the examiner acknowledges, *Sarrazin* and *Thomason* fail to disclose Group VIIB metals, and specifically Mn. However, the Examiner improperly rejects the instant claims with

the conclusory statement that adding these metals was *prima facie obvious* "to achieve a selective hydrogenation catalyst... because it is known as evidenced by *Dai*." Assuming, *arguendo*, the Examiner had considered the references as a whole, *Dai* provides teaching away from the disclosures of *Sarrazin* and/or *Thomason*. MPEP §2141 (citing *KSR International Co. v. Teleflex Inc.*, 127 S. Ct. 1727 (2007)) notes that the Supreme Court rejected the rigid application of the "teaching, suggestion, or motivation" (TSM) test. However, the Court did not totally reject the use of TSM as a factor in an obviousness determination because it is "important to identify a reason that would have prompted a person of ordinary skill in the relevant art to combine the [prior art] elements" in the manner claimed. The Examiner fails to acknowledge the teaching away from the claimed catalyst provided by *Dai*. Specifically, *Dai* discloses that the catalyst:

"has the advantage of good stability, small changes in catalysts properties after multiple times regenerations, easily controllable physical parameters, improved regeneration period and service life due to the addition of rare earth metals (Col 3, lines 11-15, emphasis added)."

With regards to the instant claims, *Dai* fails to include any Group VIIB metals such as Mn in the background discussion of known co-catalyst metals or as potential second active components for the catalyst (Col 2, lines 5-33; Col 5, lines 21-38). Additionally, *Dai* provides no experimental evidence for adding a Group VIIB metal in a catalyst formulation. In fact, the experimental data of *Dai* provides for catalyst compositions requiring Palladium (Pd), Silver (Ag), Bismuth (Bi) and having a variable rare earth metal (Col 6 line 40 to Col 13, line 62). As such the disclosure of *Dai* provides a teaching for including a rare earth metal as a co-catalyst metal, but fails the TSM test for the instant claims. Therefore, the Examiner's conclusory statement is insufficient for a finding of *prima facie obviousness* for any combination of references with *Dai*. Applicants submit the claims 37-39, 41-44, 46-47, 48, and 49-50 are patentable over any combination of the references with *Dai*.

IV. Conclusion

Applicants, request reconsideration of the amended claims, as set forth, and a timely Notice of Allowance issued for pending claims 1-4, 6, 10-16, 18- 20, 23-30, 32-33, 35-39, 41-44, 45-44, 49-77, and 112-119.

In the course of the foregoing discussions, Applicants may have at times referred to claim limitations in shorthand fashion, or may have focused on a particular claim element. This discussion should not be interpreted to mean that the other limitations can be ignored or dismissed. The claims must be viewed as a whole, and each limitation of the claims must be considered when determining the patentability of the claims. Moreover, it should be understood that there may be other distinctions between the claims and the prior art that have yet to be raised, but which may be raised in the future.

If a petition for extension of time is necessary in order for this paper to be deemed timely filed, please consider this a petition therefore. The Commissioner is authorized to charge any additional fees incurred in this application to Deposit Account No. 03-2769 of Conley Rose, P.C., Houston, Texas.

If the Examiner has questions or comments regarding this communication or feels that a telephone conference would advance prosecution of this case, the Examiner is warmly solicited to contact the undersigned at the earliest convenience.

Respectfully submitted,

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